AN IMPROVED METHOD AND SYSTEM FOR IDENTIFYING SUBROGATION POTENTIAL AND VALUING A SUBROGATION FILE

Related Application

5   This application is related to commonly assigned and copending United States Patent application serial no. 60/207,246, entitled "ONLINE METHOD AND SYSTEM FOR FULFILLING NEEDS RESULTING FROM PROPERTY AND OTHER SIMILAR LOSSES" filed May 26, 2000.

Field of Invention

The present invention relates generally to subrogation and more particularly to methods and systems for identifying subrogation potential and subrogation file valuing.

Background of the Invention

Generally, subrogation refers to an insurer's right to recover losses paid under insurance contracts from parties legally liable for the damages. A problem often encountered is that an insurer or entity that is designated to recover the loss can incur significant costs in assessing the collect-ability of the claimed recovery.

20   Insurers also bear the financial and fiduciary risk of failing to recognize that specific claims may have subrogation recovery potential.

In the insurance industry as well as other financial institutions such as banking, scoring has long been an integral part of underwriting operations. This

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is largely made possible because of product standardization and buyer homogeneity.

To reduce costs, it has been found desirable to provide an expert rating, or scoring method which identifies subrogation potential early on in a claimshandling process, and serves as a predictor of recoverability in order to improve collection efficiencies. It is a further object of the present invention to enable pooling or packaging of claims into portfolios for eventual sale of the subrogation rights on the underlying claims to entities that specialize in such collection activities, for example.

Summary of the Invention

A method for identifying select ones of insurance records which possess a favorable subrogation potential, the method including: receiving data indicative of a plurality of claims; automatically calculating a base score to identify select ones of the claims which demonstrate at least a given probability of expected subrogation recovery dependently upon the received data; automatically identifying risk factors for each of the select claims; and, automatically scoring each of the select claims dependently upon the base scores and identified risk factors to provide a value indicative of an expected subrogation recovery.

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Brief Description of the Figures

Various other objects, features and advantages of the invention will become more apparent by reading the following detailed description in conjunction with the drawings, which are shown by way of example only, wherein:

FIG. 1 illustrates a block diagram of a first method for practicing the present invention;

FIG. 2 illustrates a block diagram of a second method for practicing the present invention;

FIG. 3 is a block diagram, which illustrates how subrogation opportunities are identified according to the invention;

FIG. 4 is a block diagram, which illustrates the use of the data warehouse in subrogation scoring according to the invention; and

FIG. 5 is a block diagram, which illustrates how the invention compiles, values and sells subrogation rights.

Detailed Description of the Invention

Subrogation identification refers to a method for recognizing if a claim file has subrogation potential or might be found to have potential after further investigation. Subrogation scoring refers to a method for valuing a subrogation file. The score provides a measure of the collectability of a subrogation claim. Once a score of collectability is determined, a monetary value can be associated

with it. This enables the subrogation rights on groups of claims to be bundled into a marketable "security". These securities may then be sold to entities possessing collection capabilities, for example.

In other words, the existence of a centralized collection of claims would allow subrogation claims files to be created. Once the value of such files are established, a market for the sale of their subrogation rights may be established. Essentially an exchange of marketable subrogation claims could be created. In a business-to-business (B2B) exchange, sellers, market makers and investors can transact for wholesale claims, pre-and post-accident purchase and sale of traunches of risk obligations and subrogation rights.

The present system and method preferably automatically scores a claim to determine a likelihood of subrogation potential, and then, the value of the claim recovery. A checklist is provided for the recovery specialist to follow to standardize operations and maximize recoveries. The subrogation opportunity is valued by reviewing criteria such as accident description, loss state, responsible party, and other pertinent demographics. Once the system and method assigns a subrogation identification rating, a score and valuation, the claims with definite subrogation potential are bundled or pooled with other claims that have some commonality to the newest claim. Thereafter, the bundled set or portfolio is valued as to its sale price. As a central market for wholesale claim service and financial liquidity, the invention can utilize network economics to further reduce

claim handling costs to its participating insurance companies, while building an electronic database about claims handling.

Referring now to FIG. 3, in one embodiment of the present invention subrogation opportunities are identified using claim data 70 obtained via a web site 72 during an interview or interrogation process 74, for example. The claim data is analyzed 76 for state, type of claim, accident description, loss date, claim notes, presence of a favorable police report, existence of an insurance carrier, and other similar criteria. As subrogation opportunities are identified 78, the claimant's file is passed to the subrogation process for servicing. If no subrogation opportunity is found, the file is closed 79.

Factor values are derived from an assessment of similar historical claims recoveries. Using these factors, a probability of recovery is calculated. The factors and weights potentially vary by customer. The system assigns a strategy and checklist for working the account based on the score resulting from the calculated probability of recovery as well as on the type and circumstances of the claim. The scoring is then applied to a grouping of claims/accounts to determine the aggregate value of the group. The value of the group is used in a subrogation claim exchange process 86.

FIG. 5 illustrates how the invention compiles, values and sells subrogation rights. Claims files 90 stored in the data warehouse 82 are searched to identify 91 claims with subrogation rights and potential. A claim with subrogation potential is scored 92 as to the probability of its recovery, and the cost of recovering the

claim is estimated 93. The recovery score and the estimated timing and costs of recovery assessment are used to set a value 94 for the claim. Once the claim is valued, it is bundled or pooled 95 into a group with other claims that have some commonality to the claim. In particular, the claims are grouped according to pre-established criteria, examples of which include but are not limited to dollar value, type of claims (automobile, homeowners) state or region. The bundled group or portfolio of claims is then valued 96 as to its sale price and risk potential and offered for sale 97 in an auction-like manner. The bid, ask and sale prices are then recorded 98 in the data warehouse.

Referring again to the subrogation scoring 92, it predicts the potential for claim loss and deductible recoverability. Insurers and subrogation collection agencies can use this score to optimize collection strategies and staffing levels, price assignments of subrogation rights and set netback guarantee rates for example.

A subrogation score can be used to set up strategies for contingent collection services, further reducing internal costs. It can be used to establish manpower needs, set goals, and measure collector efficiencies. In an environment where the subrogation rights are grouped into categories based upon multiple criteria, one of which is a valuation based upon a subrogation score, these groups or portfolios can be offered for sale. In this case the score would be integral to pricing the portfolio and evaluating risk.

Three types of subrogation scores that predict these recoveries, including or excluding collection expense utilized according to a preferred form of the present invention are: COLLECTION SCORE, NET BACK SCORE and NET LIQUIDATION SCORE. All scores reflect predictions of subrogation recoveries for individual claims. All scores are derived from algorithms factoring in characteristics of: underlying insurance, the underlying insurance claim, legally liable party (tortfeasor), the tortfeasor's insurance carrier, the current economic environment, and collection operations, for example.

The COLLECTION SCORE focuses on the expected ultimate loss recovery. The NETBACK SCORE is a composite scoring valuing recoveries net of collection expense. The NET LIQUIDATION SCORE is a more sophisticated version of the NETBACK SCORE. Values reflect the net present value of ultimate losses recovered and costs expensed. It should be recognized that this is reflective of a future market in subrogation portfolio sales.

Basically, the NETBACK SCORE = LIQUIDATION SCORE – EXPENSE SCORE. The LIQUIDATION SCORE component expands the COLLECTION SCORE to incorporate the element of time. A set of LIQUIDATION SCORES is created reflecting rates of recoveries at 12, 15, 18, or 24 months as well as at ultimate, for example. The EXPENSE SCORE factors in unit cost estimates based on operational strategies. These can be generalized for common consumption or customized for specific buyers.

Referring now to FIG. 1, therein is illustrated a preferred form of the present invention 100, wherein data for a claim is received through one of several methods such as extraction from a web-based interface at the point of loss entry, file transfer of batch of claims closed during a target period, or batch of claims just placed for subrogation collection 110. A base score, or COLLECTION SCORE, is calculated 120, a set of external databases is queried for additional data relating to the claim, such as the legally liable party or the party's insurance carriers 130, risk factors are identified 140 and a final score, or value, indicative of the expected recovery is provided 150.

According to a preferred form, the COLLECTION SCORE, related to the expected recovery, rate is first calculated for each claim by: (1) calculating an expected probability a legally liable party will make a payment; (2) calculating an expected probable percentage of losses recovered through payments received from legally liable parties; (3) adjusting resultant scores for differences due to economic conditions or operation strategies or efficiencies; and, (4) identifying specific risk factors associated with the individual claims and adjusting the resultant score accordingly.

Next, the NETBACK SCORE is calculated for each of the claims by: (1) calculating the LIQUIDATION SCORE at specific periods of time; and, (2) calculating the EXPENSE SCORE for each of the specified periods of time. Next, the NET LIQUIDATION SCORE is calculated by analogously.

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Referring now also to FIG. 2, therein is illustrated an alternative method equally applicable to the present invention, wherein like elements or steps to those of FIG. 1 are designated with a ' symbol. Basically, data for a claim is received 110', a base score, or COLLECTION SCORE, is calculated 120' by querying an external database for example, a risk factor is identified 140' and a final score, or value, indicative of the expected recovery is provided 150'. If more risk factors remain to be considered, steps 140' and 150' are repeated 160'.

The present invention's method of subrogation collection scoring focuses on the expected ultimate loss recoverability, as well as the collection timeframe. Referring now more particularly to variables considered which are used to derive these scores using appropriate algorithms, for the underlying insurance, characteristic variables used preferably include: whether the claim arises from a preferred, standard, nonstandard or affinity policy group; whether a personal or commercial lines policy is involved; and, whether the responsible party has insurance as well as if both first and third party insurers are members of a common alternative dispute resolution organization.

Variables associated with the underlying insurance claim preferably include: the number of subrogation collection agencies who have previously worked the account; the type of underlying claim; the size of the claim; the length of time since loss occurrence when the present collection effort is initiated; the negligence laws associated with the state of legal jurisdiction; the relative degree of insured's and tortfeasor's negligence; whether legal action was initiated under

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statute of limitation or whether there was some extension of statute of limitations; and, whether there exists any type of legal judgments rendered.

The variables used associated with the legally liable party (tortfeasor) preferably include: for uninsured and underinsured individuals or groups of individuals- income levels; homeownership; gender; presence of children; number of years at current residence; age; and, marital status. For uninsured businesses, variables used preferably include: bankruptcy; existence of liens; judgments; derogatory legal information; problems in paying suppliers; number of employees (size of business); other financial strength indicators; length of time in business; business structure (incorporated, "doing business as", LLC); and type of business. For other uninsured parties, the variables preferably used include: whether the party is a nonprofit agency; fraternal in nature; or, a type of government agency.

For the tortfeasor's insurer, variables used preferably include: financial strength; resistance to pay characteristics; common membership in alternative resolution pools; and, the type of insurance business.

For the current economic environment characteristic, variables used preferably include: inflation; interest rates and tight money conditions; unemployment and bankruptcy levels; financial strength of legally liable party's industry and geographic region; and generalized or unique subrogation operation expense and effectiveness assumptions.

Scores preferably range from 0 to 1,000. The higher the score, the greater the probable recovery. A score of 1,000 indicates a probable full recovery, while a score of 0 is given when no recovery is expected.

To develop the scores, first each subrogation claim X_I is encoded to describe characteristics of:

1. the claim, legally liable party and tortfeasor's insurer I, where:

   $X_I \in \{I(i,j) \mid$ attribute $j = 1,..,k$ for characteristic $i = 1,2,...l\}$

   $Y_I \in \{I(i,j) \mid$ risk factor $m = 1,..,z$ associated with the specific debt$\}$

2. the current economic environment A, $A \in \{a_1, a_2, a_3, ..., a_n\}$

3. and, the collection strategies B, $B \in \{b_1, b_2, b_3, ..., b_n\}$

Scores are then calculated using expected values associated with the encoding in the baseline subrogation operation and in the economic environment. More specifically, For every Claim X_{IAB},

The SUBROGATION COLLECTION SCORE $(X_{IAB}, Y_I) =$

$10,000 \, E(P_I \, R_I \, N_{IA} \, O_{IB}) \, \Pi Y_{Im}$,   for $m = 1,..,z$

SCORE $\varepsilon \, [0,...,10,000]$, where

$\quad P_I \;=\;$ probability of a legally liable party with characteristics I making any payment;

$\quad R_I \;=\;$ probable percentage of losses recovered from parties who make any payment;

$\quad N_{IA} =\;$ adjustment reflecting the difference in expected recoveries from base expectations under economic scenario A;

O_{IA} = adjustment reflecting the difference in expected recoveries

from base expectations under operational scenario B; and,

Y_{IM} = risk factors associated with characteristics of the claim

Factors vary by type of claim. Looking at each in turn.

5   P_I: The dominant general model for the Probability of a Legally Liable Party with Characteristics I Making Any Payment is in the form:

$$P_I = \alpha_{0I} + \alpha_{1I}[e\phi / (1 + e\phi]$$
$$\phi = \ln(p_{ij}) = \sigma_{0ij} + \sigma_{1ij}(0,1) + \sigma_{2ij}(0,1) + ... + \sigma_{kij}(0,1)$$

for $X_I \in \{I\,(i,j) \mid$ attribute j $=1,..,k$ for characteristic i $= 1,2,...I\}$

10   Predictive parameters are estimated based on an assessment of historic recovery patterns using: (1) a combination of parametric and nonparametric statistical techniques including but not limited to binomial estimation, binomial regression, general loglinear, and logit loglinear analysis, and Ordinal Regression, and, (2) heuristics. In all cases, the resultant $P_I \varepsilon (0,1]$

15   R_I: The dominant form for the Percentage of Loss Collected when payments are made is a piece-wise defined function. This is because the predominant recovery is 100%. Parameters are developed from an assessment of historic recovery patterns using: (1) a combination of parametric and nonparametric statistical techniques including but not limited to: general loglinear, and logit loglinear analysis, and Ordinal Regression, (2) age-to-age analysis trends, and (3) heuristics. In all cases: $R_I \varepsilon (0,1]$

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N_{IA} Economic Scenerios reflect, but are not limited to, characteristics such as: (1) Unemployment and bankruptcy rates, (2) Interest rates and tight money conditions, (3) Financial strength of legally liable party's geographic area and industry, (4) Inflation, and (5) Leading economic indicators. The dominant form is $[1+ E(v_{Ia}]$ for a $=1,..,n$. where, v_{Ia} is a binomial distribution $\cong N(0,1)$. Factors are developed using monte carlo simulation techniques, based on heuristics and/or statistical observations of payor and liquidation patterns.

O_{IB} Operational Scenarios reflect, but are not limited to, characteristics such as: (1) Type and amount of prior collection efforts, (2) Quality of subrogation screening, investigation and documentation conducted during settlement of underlying claim, (3) Thresholds for attorney involvement, filing of law suits and use of alternative dispute resolutions mechanisms, (4) Settlement authority and strategies, and (5) Positions on skip tracing and additional investigation efforts. The dominant form is $[1+ E(O_{Ib})]$ for b $=1,..,n$. where, O_{Ib} is a binomial distribution $\cong N(0,1)$. Factors are developed using monte carlo simulation techniques, based on heuristics and/or statistical observations of payor and liquidation patterns.

$Y_{IM} =$ Risk Factors reflect, but are not limited to, characteristics such as: (1) Limitations of legal process due to statutes of limitations, (2) Degree of Insured's and tortfeasor's legal culpability in specific claim, (3) Reduced collection potential evidenced by failure of other collection agencies to recover on claim, and (5) Limitations due to difficulty in identifying and / or locating tortfeasor. The dominant form is $[1+ E(\omega_{Im})]$ for m $=1,..,z$. where, ω_{Im} is a binomial distribution $\cong N(0,1)$. Factors are developed

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using monte carlo simulation techniques, based on heuristics and/or statistical observations of payor and liquidation patterns.

Validation of the mathematical models is done in several steps. The first goodness-of-fit criteria to be met is a demonstrated unbiased pattern of Chi-square residuals made against the original fitted data. This is followed by differing levels of stochastic-based retrospective testing as well as simulated user tests.

The NET BACK SCORE is a composite score incorporating the cost of collection into the predictions. It reflects the estimated relative expected loss recoveries net of expense (netback). Options are to do so at the end of 12, 15, 18, or 24 months in the future or to do so at ultimate. As set forth, NET BACK SCORE= LIQUIDATION SCORE – EXPENSE SCORES, all at time t. The LIQUIDATION and SUBROGATION COLLECTION SCORES are sisters. They differ only in the predictive timeframe. When the LIQUIDATION SCORE is calculated at ultimate, the scores are twins.

The EXPENSE SCORE reflects either unit costs for specific types of activities or general expense loads. It is based on either specific or generalized operational strategies.

Like the COLLECTION SCORE, NET BACKS SCORES are derived from algorithms factoring in characteristics of the underlying insurance claim, legally liable party, tortfeasor's insurer and the current economic environment.

Costs can reflect those of a standard subrogation facility or one using customized operational strategies.

In one embodiment of the present invention, scores range from –10,000 to +10,000. The higher the score, the greater the probable recovery. A score of 10,000 indicates probable full recovery at no material expense. A score of 0 is given when collection costs are equal to recoveries. A score of –10,000 reflects expected expenses at least twice exceed expected recoveries.

As set forth, to develop the scores, first each subrogation claim X_I is encoded to describe characteristics of the claim, legally liable party, and tortfeasor's insurer I, where

$X_I = \{I\,(i,j) \mid j$ refers to attribute $1, .. ,k$ for each characteristic $i = 1,2,...l\}$

$Y_I = \{I\,(i,j) \mid$ risk factor $m =1, .. ,z$ associated with the specific debt$\}$,

the current economic environment A, $\qquad$ $A =\{a_1, a_2, a_3, ..., a_n\}$

collection strategies B, $\qquad$ $B =\{b_1, b_2, b_3, ..., b_n\}$

unit cost factors C, $\qquad$ $C =\{c_1, c_2, c_3, ..., c_n\}$

A score set is then developed for time T, where $T = \{t1 = 12$ months, $t2 = 15$ months, $t3 = 18$ months, $t4 = 24$ months, $t5 =$ at ultimate$\}$. Each NETBACK SCORE set is calculated using expected values associated with the encoding over the range of time t. For Claim X_{IAB}, and $t = 1, 2, 3, 4, 5$, SUBROGATION NETBACK SCORE $(X_{IABt}, Y_I) =$ LIQUIDATION SCORE (X_{IABt}, Y_I) – EXPENSE SCORE (X_{IABt}). LIQUIDATION SCORE $(X_{IABt}, Y_I) = 10{,}000\ E(P_{It}$ $R_{It}\ N_{IAt}\ O_{IBt})$ for $m =1, .. ,z$, limited to be in $[0.0000, ... 10{,}000]$.

Calculating the LIQUIDATION SCORE is otherwise identical to the SUBROGATION COLLECTION SCORE. The LIQUIDATION SCORE is based on evaluation of recoveries over the range of time t; the SUBROGATION SCORE, at ultimate.

The EXPENSE SCORE, however is unique. EXPENSE SCORE (X_{IABt}) = 10,000 $E(U_{IBt}\ O_{IBt})$, where U_{IBt} = Unit Cost of Collection Activity under Operational Scenerio B through time t. Q_{IBt} = Adjustment Reflecting the Difference in Expected Costs Under Operational Scenario B, From the Baseline. Looking at the mathematical factors in turn,

U_{IBt} Unit Costs under Operational Scenerios B reflect but are not limited to, characteristics such as: (1) (Cost of phone calls) X (Expected Number of calls to be made), (2) (Cost of letters mailed) X (Expected Number of letters to be sent), (3) (Cost of additional investigation, legal documentation expense, and skip tracing) X (probability this will be necessary), and,(4) (Costs of legal action over the spectrum of legal actions possible) X (probability this will be necessary). The dominant form is $[1+ E(\chi_{Im})]$ for c =1,..,n, where, χ_{Im} is a binomial distribution $\cong N(0,1)$. Factors are developed using monte carlo simulation techniques, based on heuristics and/or statistical observations.

Q_{IBt} These factors calibrate the scores to reflect operational costs appropriate for the target claims. The dominant form is $[1+ E(\chi Im)]$ for c =1,..,n. Factors will be provided by the operational managers in the form of absolute or point estimates.

The validation process is identical to that of the Subrogation Collection Scores.

The NET LIQUIDATION SCORE is a more sophisticated version of the NET BACK SCORE. Values reflect the net present value of both the recoveries and expenses, based on prevalent interest rates. This score is useful for subrogation portfolio purchases.

At an interest rate of 0, the NET LIQUIDATION SCORE and NET BACK SCORE at time ultimate are identical. The mathematics differ only in application of a present value factor to all components. Validation procedures are identical.

Table-1 summarizes the foregoing as a chart of attributes and risk factors:

TABLE-1

Attributes	Risk Factors	
X		underlying insurance
	X	preferred / standard / nonstandard / affinity group
	X	personal / commercial lines
	X	membership of first and third party insurers in common alternative dispute resolution organizations
		underlying insurance claim
	X	number of collection agencies who have previously worked the account
X		type of underlying claim
X		size of claim
X		length of time since loss occurrence when this collection effort is initiated
X		negligence laws associated with the state of legal jurisdiction

	X	relative degree of insured's and tortfeasor's negligence
	X	whether legal action was initiated under statute of limitation or whether there was some extension of statute of limitations
	X	existence and type of legal judgments rendered
X		legally liable party (tortfeasor)
	X	Type of information available to identify and locate responsible party
X		for uninsured / underinsured individual or group of individuals
X		income levels
X		homeownership
X		gender
X		presence of children
X		number of years at current residence
X		age
X		marital status
X		for uninsured businesses
X		bankruptcy
X		existence of liens, judgments, derogatory legal information
X		problems in paying suppliers
X		number of employees (size of business)
X		other financial strength indicators
X		length of time in business
X		business structure (incorporated, "doing business as", LLC)
X		type of business
X		for other uninsured parties
X		nonprofit agency
X		fraternal
X		government agency
X		for tortfeasor's insurer
X		financial strength
X		resistance to pay characteristics
	X	common membership in alternative resolution pools
X		type of insurance business

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To use this information, a table of base scores is established using an historic assessment of collection patterns for subrogation claims with the common attributes identified above. These represent the average recovery expectations for claims with similar attributes. This "average" base score is then finetuned using the risk factors above to reflect the specific recovery expectations for each individual claim.

EXAMPLE 1

For simplicity, an example is now discussed in which there are only these attributes: (1) Type of underlying claim - automobile physical damage or workers compensation; Size of Claim - $500 or $1,000; and, Type of Legally Liable Party - person or business. The base score table then would have 8 entries, each one reflecting the average historic expectations for the type of claims. Exemplary data is provided in Table-2.

TABLE 2

CLAIM TYPE	CLAIM SIZE	PARTY TYPE	SCORE
AUTO PHYS DAMAGE	$500	PERSON	350
AUTO PHYS DAMAGE	$1000	PERSON	750
AUTO PHYS DAMAGE	$500	BUSINESS	400
AUTO PHYS DAMAGE	$1000	BUSINESS	800
WORKERS COMP	$500	PERSON	300
WORKERS	$1000	PERSON	600

COMP			
WORKERS COMP	$500	BUSINESS	350
WORKERS COMP	$1000	BUSINESS	650

Supposing "Party A" and "Party B" each had separate car accidents with $500 worth of damage. According to a preferred form of the present invention, you start with a base score of 350 reflecting a 35% chance of loss recovery. The second step according to the present invention is to adjust the base for the set of claim specific risk factors Again for sake of explanation, it will be assumed there are only two: Statute of limitations - too late to take legal action or plenty of time, and Degree of negligence - other party either 100% or 50% to blame. These are independent conditions and, like all risk factors, are assessed separately. The final score becomes a product of the base score and all risk factors. For example, the Final score = base score X risk factor1 X risk factor 2.

For the exemplary case the risk factors can be summarized as indicated in Table 3.

TABLE-3

RISK FACTOR CLASS	SUBCLASS	RISK FACTOR
STATUTE OF LIMIT	Too late to take action	0.0000
STATUTE OF LIMIT	Plenty of time	1.0000
OTHER PARTY'S NEG	100%	500.0000
OTHER PARTY'S NEG	0.0%	1.0000

Assuming Party B was totally to blame, but Party A's insurer took too long to pursue the case, the final score for Party A would be calculated as: Party A base score (350) X other party to blame (500) X too late for action (0.0000) = 0.0000. This reflects a 0% chance of recovering losses after the statute of limitations has passed and there is no legal recourse, which is reasonable score for this case.

For a second example, assume Partys A and B are equally to blame and that there is plenty of time to file legal action. Party B's final score can be calculated as Party B base score (350) X other party 50% to blame (1.0000) X plenty of time (1.0000) = 350. It should be noted there is nothing about this particular claim that would temper or override the base score. Thus, the factors correctly leave the base score unchanged. This final score reflects a 35% chance of recovering losses, average for this type of claim. Collections depend on the skill of the negotiators and willingness and ability of the other party to pay.

EXAMPLE 2

Table-4 summarizes information provided by a customer in a second example.

TABLE-4

Type of Claim	Auto Collision
Accident Description	IV & OV collided in X
Claim Handler Negligence Assessment	None available

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Accident State	California
Loss to be recovered	$1,250
Deductible to be recovered	$250
Type of insurance from which claim arose	Standard Personal Auto Policy
Age of Claim at time placed with subrogation unit	65 days
Legal Action Started? Judgment Rendered?	No
Legally Liable Party	Person
Information Available to identify party	Name, address, phone
Insurance Status	Uninsured
Number of collection agencies working account	1

This information can be supplemented by information about the legally liable party which can be obtained through automatically generated queries of commercially available databases for example. Table 5 summarizes exemplary information that can be obtained.

TABLE-5

Gender	Male
Homeownership	Probable
Years at Current Address	2
Household Income	45,000
Age	23

I.   SUBROGATION IDENTIFICATION SCREENING PROCESS

An analytical approach is used to screen for subrogation potential. It queries the information provided, assessing whether it has sufficient information to determine subrogation potential or additional information is required. It is dynamic with a learning - feedback mechanism, that continuously identifies new vocabulary and phrases. Once encountered, new phrases and related risk

assessments are added to the utilized subrogation encyclopedia. Statutory rule changes are also made periodically. As an option, answers may be calibrated for specific customers.

More particularly, in a preferred embodiment the screening process can be summarized as follows:

Is this a 1st party claim which insurers typically have the right to subrogate? Yes. Standard Personal Auto contracts typically contain contractual language giving the insurer the right to recover payments made to indemnify the insured when someone else is legally liable for all or part of the damages.

Are there legal prohibitions against subrogation in the particular state of legal jurisdiction? There are none in California.

Is the claim closed or expected to close without payments? No. Recovery of $1,500 is being sought.

Have rights under the statute of limitation been preserved? Is there time to bring legal action? The loss event occurred 65 days ago, leaving plenty of time to begin legal action within the statute of limitation.

Does the accident description of other information provided show someone else might be liable for all or part of the loss? Yes. We are interpreting "IV & OV collided in X" to mean the insured vehicle and another vehicle collided in an intersection. The assessment is that negligence is shared, probably 50% / 50% between the insured and the other party.

Does the state bar recovery based on the insured's degree of negligence? No. California is a "pure" comparative negligence state. Insurer would be entitled to 50% recovery based on a shared 50% negligence.

Is there enough information to identify and locate the alleged legally liable party? There appears to be. Full name address and phone number were provided.

Using convention business logic, this analysis leads to a conclusion there is "DEFINITE SUBROGATION POTENTIAL" and that a "SUBROGATION RECOVERY POTENTIAL CAN BE SCORED" for example.

II. CALCULATION OF A SUBROGATION COLLECTION SCORE

A mathematical approach to calculate a score is used. This process is also dynamic, incorporating a feedback loop. Actual results are compared with statistical expectations for benchmark books at various points in time. Whenever a pattern develops where the scores vary beyond statistical expectations, the scores are recalibrated. In a preferred embodiment, the analytical algorithm is as follows:

For every claim X_{IAB}, the COLLECTION SCORE $(X_{IAB}, Y_I) = 10,000$ $E(P_I R_I N_{IA} O_{IB}) \Pi Y_{IM}$, where

P_I = Probability of a legally Liable Party with Characteristics I Making Any Payment

R_I = Probable Percentage of Losses Recovered from Parties who Make Any Payment

N_{IA} = Adjustment Reflecting the Difference in Expected Recoveries from Base Expectations Under Economic Scenario A

O_{IB} = Adjustment Reflecting the Difference in Expected Recoveries from Base Expectations Under Operational Scenerio B; and,

Y_{IM} = Risk Factors associated with characteristics of the claim.

Let I be the claim presented above where we are seeking recovery of $1,500 arising from a California personal auto collision claim, examined 65 days after the accident. We are subrogating against an uninsured individual for an accident described as "IV & OV collided in X". The complete name and address is provided for the driver of the other vehicle. This is the 1st agency trying to recover the money.

STEP 1. Calculate P_I, the Probability of a Legally Liable Party Making a Payment.

$P_I = P(i,j)$ where the "i" factor reflects a personal lines collision claim with an uninsured individual as legally liable party. The "j" factor reflects characteristics of the claim and legally liable party.

For auto collision, P_I takes the form of $\alpha_{0I} + \alpha_{1I}[e^{\theta}/(1+e^{\theta})]$

$$\theta = \ln(p_{ij}/(1+p_{ij})) = \sigma_{0i} + \sigma_{1ij}(0,1) + \sigma_{2ij}(0,1) + \sigma_{3ij}(0,1) + \sigma_{4ij}(0,1)$$
$$+ \sigma_{5ij}(0,1) + \sigma_{6ij}(0,1) + \sigma_{7ij}(0,1) + \sigma_{8ij}(0,1)$$

For this claim i.....

σ_0 is the logistic regression constant.

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$\sigma_{0i} = .829$

σ_{1ij} (0,1) refers to the size of claim.

$\sigma_{1i(\$1,001\text{-}2,000)}$ (0,1) = $1.099*0+.2570*0-.019*1-.038*0-.1620*0-.1620*0$

$-.2860*0-.2860*0-0.2855*0-0.285*0-0.2845*0-$

$0.284*0$

$= -0.019$

σ_{2ij} (0,1) refers to the age of claim.

$\sigma_{2i(61\text{-}90\ days)}$ (0,1) = $-1.214*0-1.4540*1-2.018*0-2.4110*0-2.678*0-$

$2.247*0-1.851*0+-1.846*0$

= -1.454

σ_{3ij} (0,1) refers to the accident state negligence laws.

$\sigma_{3i(compartive\ negligence)}$ (0,1) = $-1.3055*0-.04*1-.2365*0-.2365*0-$

$1.3055*0-1.99*0-.8523*0$

= $-.04$

σ_{4ij} (0,1) refers to the age of the legally liable party.

$\sigma_{4i(19\text{-}35\ years\ old)}$ (0,1) = $.472*1-.38*0-.722*0-.832*0 -0.3655*0+0.472*0$

$=.472$

σ_{5ij} (0,1) refers to household income.

$\sigma_{5i(\$35,000\text{-}49,999)}$ (0,1) = $-1.3055*0-.04*1-.2365*0-.2365*0-1.3055*0$

$-1.99*0 -0.8523*0$

$= -.04$

σ_{6ij} (0,1) refers to gender.

$\sigma_{6i(male)}$ (0,1) =-.45*0-.62*1-.0*0-.86*0

$= -.62$

σ_{7ij} (0,1) refers to homeownership.

$\sigma_{7i(probable\ homeowner)}$ (0,1) =-.171*1-.231*0

$= -.171$

σ_{8ij} (0,1) refers to the number of years at the current address.

$\sigma_{8i(1-3\ years)}$ (0,1) =.239*0+.778*1+1.546*0+4.783*0+1.3736*0

$=.778$

For this claim,

$\theta =$ .829 -.019 -1.454 -.04 +.474 -.04 -.62 -.171 +.778

$e^{\theta} =$ 0.76874

It should be noted there were no calibration adjustments for this claim

α_{0I}, the additive calibration factor $= 0$

α_{1I}, the multiplicative calibration factor $= 1$

Putting the pieces together, the probability of the legally liable party for

this claim making a payment, the expected value….

$E(P_I)$ $= \alpha_{0I}+\alpha_{1I}[e^{\theta}/(1+e^{\theta})]$

$= 0 + 1\ (.76874/(1+.76874)$

$= 43.46\%$

STEP 2. Next, calculate R_1 = the Probable Percentage of Losses Recovered from Parties who Make Any Payment.

$_1 = R(i,j)$. The "i" factor reflects a personal lines collision claim with an uninsured individual as legally liable party, the "j" factor reflects the size of claim ($1,001 - $2,000).

or this claim, The expected value, $E(R(I, \$1,001 - \$2,000)) = .7485$

STEP 3. Through N_{IA}, factor in any adjustments needed for differences from the baseline due to changes in economic conditions.

$N_{IA} = N(i,a) = 1 + E(v_{ia})$. The "i" factor reflects a personal lines collision claim with an uninsured individual as legally liable party. The "a" factor reflects the economic environment of the legally liable party's residence in California, plus countrywide inflation factors and changes in the leading economic indications.

For this claim, the expected value $E(N_{IA}) = 1 + (.026) = 1.026$

STEP 4. O_{IB} = adjusts for differences from the baseline due to differences in operation strategies or efficiencies.

$O_{IB} = O(i,b) = 1 + E(O_{ib})$. The "i" factor reflects a personal lines collision claim with an uninsured individual as legally liable party, the "b" factor reflects known differences in collection startegies that would impact these types of recoveries.

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For this claim we have factored in no differences from our benchmark. The expected value $E(O_{ib}) = 1 + (.0) = 1.000$.

In STEP 5 we can now put together the major piece of our equation. For this claim, $E(P_I R_I N_{IA} O_{IB}) = 43.46\% \times .7485 \times (1.026) \times 1.000 = 33.38\%$ This is the expected recovery rate for this type of claim.
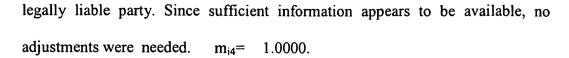
IN STEP 6, through Y_{IM} specific risk factors associated with the circumstances of the claim are brought in.

m_{i1}, modifies recovery expectations due to limitations of legal process arising from any statutes of limitations or other state prohibitions. For this claim, $m_{i1}=1.0000$. Working within the statue of limitations should not present a problem and there are no state issues.

m_{i2}, modifies recovery expectations due to state recovery limitations based on the insureds culpability. For this claim, the insured and other driver were assessed as both 50% at fault. This is the average expectation in our baseline and no adjustments were made. Here $m_{i2}=1.0000$.

m_{i3}, modifies expectations if other agencies have attempted and failed to recover for the claim. Since this is indicated to be the 1st subrogation placement, no modifications were made. $m_{i3}=1.0000$

m_{i4}, modifies expectations due to difficulty in identifying or locating a

legally liable party. Since sufficient information appears to be available, no adjustments were needed. $m_{i4}=$ 1.0000.

For this claim ΠY_{IM} = 1.000 X 1.000 X 1.000 X 1.000 = 1.000

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STEP 7 completes the calculations for this claim

The COLLECTION SCORE (X_{IAB}, Y_I) = 10,000 $E(P_I R_I N_{IA} O_{IB}) \Pi Y_{IM}$

= 10,000 X 33.38% X 1.000 = 3,338

III.   CALCULATION OF A NETBACK SCORE

10   The netback score is a sister of the collection score, building on its mathematical algorithms. It differs in two areas.

1. Recovery potential is quantified at the end of specific period(s) of time working the debt.

2. Collection expense is factored in.

15   The calculation is illustrated using the same example, incorporating two additional pieces of information. We are interested in the score based on 18 months of collections and factor in a 20% contingent collection fee.

The analytical algorithm, for every claim X_{IAB}, can preferably be characterized as follows:

20   SUBROGATION NETBACK SCORE (X_{IAB}, Y_I) =

LIQUIDATION SCORE (X_{IABt}, Y_{It}) – EXPENSE SCORE (X_{IABt}, Y_{It})

STEP 1 – LIQUIDATION SCORE: The mathematical algorithms for the liquidation and subrogation score are identical. The difference is that parameter values selected reflect the time series points. Without repeating the details, for our example:

LIQUIDATION SCORE $(X_{IAB(18\,months)}, Y_I)$

$=10,000\ E[\ P_{I(18\,months)}\ R_{I(18\,months)}N_{IA(18\,months)})O_{IB(18\,months)}]\ \Pi Y_{IM}$

$=10,000\ X\ 29.8\%\ X\ 1.000$

$=2,980$

Note, that the lower score reflects the omission of collections made after 18 months.

STEP 2 – EXPENSE SCORE: The expense score factors into the equation collection costs through time frames corresponding to the companion liquidation score.

EXPENSE SCORE $(X_{IABt}, Y_{It}) = 10,000\ E(U_{IBt}O_{IBt})$

Where U_{IBt} = Cost of Collection under Operational Scenerio B through time t

For our example, cost is a function of the liquidation score

$U_{Ib(18\,months)}\quad = \Gamma\{E[\ P_{I(18\,mo)}\ R_{I(18\,mo)}N_{IA(18\,mo)})O_{IB(18\,mo)}]\ \Pi Y_{IM}\}$

$= 20\%\ E[\ P_{I(18\,months)}\ R_{I(18\,months)}N_{IA(18\,months)})O_{IB(18\,months)}]\ \Pi Y_{IM}$

$= 20\%\ X\ 29.8\%$

$= 5.98\%$

O_{IBt} = is a calibration factor used to adjust the cost estimates to current.

None was needed for our example and the baseline factor is 1.000.

Putting the pieces together for our example.

EXPENSE SCORE $(X_{IABt}, Y_{It}) = 10,000 \ E(U_{IBt}O_{IBt})$

$$= 10,000 \times U_{Ibt} \times U_{Ibt}$$

$$= 10,000 \times 5.98\% \times 1.000 = 596$$

STEP 3 - Completing the calculations:

NETBACK SCORE

= LIQUIDATION SCORE (X_{IABt}, Y_{It}) – EXPENSE SCORE (X_{IABt}, Y_{It})

$$= 2,980 - 596 = 2,384$$

IV.   CALCULATION OF A NET LIQUIDATION SCORE

The NET LIQUIDATION SCORE is the discount value of the NetBack

Score where accounts are worked to ultimate completion. Mathematically, for

every claim X_{IAB},

SUBROGATION NET LIQUIDATION SCORE (X_{IAB}, Y_I)

= 10,000 present value [.0001 X LIQUIDATION SCORE (X_{IAB}, Y_I)

–   .0001 X EXPENSE SCORE (X_{IAB}, Y_I)

For our example above calculations for the liquidation score and expense score

are identical to those already explained. To complete the score:

NET LIQUIDATION SCORE $(X_{IAB}, Y_I) = 10,000 \quad X \text{ present value}$

$[.0001 X 3,338 - .0001 X 668] = 10,000 \quad X \text{ present value } (26.7\%)$

$= 10,000 \ X \ 23.3\% = 2,332$

Although the invention has been described and pictured in a preferred

5   form with a certain degree of particularity, it is understood that the present

disclosure of the preferred form, has been made only by way of example, and that

numerous changes in the details of construction and combination and arrangement

of parts may be made without departing from the spirit and scope of the invention

as hereinafter claimed. It is intended that the patent shall cover by suitable

10   expression in the appended claims, whatever features of patentable novelty exist

in the invention disclosed.